Computer Organization
Important Questions for Unit-2

1. Design the Boolean function F=A(B+CD)+BC' using NOR gates.
2. Design Full adder and explain its functionality with truth table.
3. Design the 4-bit Binary parallel Adder.
4. Design the 2-line to 4-line decoder.
5. Design the 3-to 8 decoder with the help of function table.
6. Design a SR flip flop using NAND gates. Explain the operation of the SR flip flop with the help of characteristic table and characteristic equation.
7. Design a D flip flop using NAND gates. Explain the operation of the D flip flop with the help of characteristic table and characteristic equation.
8. Design a JK flip flop using NAND gates. Explain the operation of the JK flip flop with the help of characteristic table and characteristic equation.
9. Design a T flip flop using NAND gates. Explain the operation of the T flip flop with the help of characteristic table and characteristic equation.
10. Design a SR Latch using the NOR gates. Explain the operation with the help of characteristic table.
11. Design a SR Latch using the NAND gates. Explain the operation with the help of characteristic table.
12. Design 4 to 1 Multiplexer using basic gates. Explain the operation with the help of function table.
13. Design 8 to 1 Multiplexer using basic gates. Explain the operation with the help of function table.
14. Design 2 input Ex-OR gate using minimum number of 2 input NAND gates.
15. Design 2 input Ex-NOR gate using minimum number of 2 input NOR gates.

16. Design 1 to 4 De-Multiplexer using basic gates. Explain the operation with the help of function table.
17. Realize the Boolean function F(A,B,C)= $\sum m(1,3,5,6)$ using (i) 8X1 Multiplexer, (ii) 4X1 Multiplexer.
18. Realize the Boolean function F(A,B,C)= $\sum m(1,2,5,7)$ using (i) 8X1 Multiplexer, (ii) 4X1 Multiplexer.
19. Design a 4-bit serial in and serial out shift register with the help of characteristic table.
20. Design a 4-bit Ring Counter and explain the operation with the help of circuit diagram and timing diagram.
21. Design 4-bit Johnson Counter and explain the operation with the help of truth table.
22. Design 3-bit Asynchronous up-counter with neat circuit diagram and characteristic table.
23. Design 3-bit Synchronous up-counter with neat circuit diagram and characteristic table.
24. Design 3-bit Asynchronous down-counter with neat circuit diagram and characteristic table.

25. Design 3-bit Synchronous down-counter with neat circuit diagram and characteristic table.